Thesis Project Portfolio

Temperature Checkpoint System

(Technical Report)

The Relationship Between Personal Freedoms and COVID-19 Prevention Systems

(STS Research Paper)

An Undergraduate Thesis

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Sociotechnical Synthesis

In late 2019, inter-special transmission of a novel coronavirus sparked a pandemic that challenged governments around the world to implement new measures to protect their citizens. To help alleviate the spread of this disease, COVID-19, the technical project implements a temperature-controlled checkpoint system designed to control entrance to a public space. This mechanism communicates with a central data server to enhance the owner's decision-making ability to help with contact tracing and cleaning patterns. Naturally, this system could potentially infringe on the personal freedoms of the population it is monitoring. Therefore, the STS research focuses on analyzing why COVID-19 prevention systems are preferred by different social groups and makes recommendations for future policymakers to consider when the next pandemic strikes. The STS research is tightly coupled with the technical project since both address the need for novel COVID-19 prevention systems and other facets of the recent pandemic response.

Ideally, individuals would be tested for COVID-19 before they are permitted to enter a public space. However, rapid testing is expensive, and producing tests on that scale would be an engineering feat within itself. For this reason, many places of business have implemented generic screening methods. However, these methods leave the employee administering the method at risk for transmission. Therefore, the technical project aimed to create a cost-effective device that could screen visitors for fevers before they entered the building. That way, the likelihood that the disease is spread within that building is diminished, and people can feel safer going about their business. In addition to this goal, the device aims to keep track of statistics and communicate that information over a web-based dashboard to influence cleaning schedules and contact tracing.

The STS research thesis aims to uncover what factors govern the adoption rate and type of implementation of COVID-19 prevention measures using the Social Construction of Technology framework. Around the world, different social groups have different requirements of

prevention measures, and sometimes those requirements can be in conflict with other values those social groups hold. These different groups apply differing ethical frameworks to their prevention schemes, and these differing schemes can have harsh unintended impacts in other facets of the population's lives. Therefore, the STS research analyzes how the different technologies are adopted and how these technologies impact personal freedoms of those that adopt them. The thesis then concludes with a recommendation for future policymakers citing comparative research that analyzes the impacts on human lives, economies, and freedoms of different containment procedures.

In conclusion, disease prevention is an important topic that ripples out to define entire cultures and ways of life. The massive impact on the global community of COVID-19 cannot be understated, and the techniques used to fight the disease must be scrutinized to the highest degree. Therefore, effort must be made to improve upon current prevention systems to help prepare the world for the next life altering pandemic.